

REMARKS

In the Office Action dated March 10, 2003, the Examiner made the Restriction Requirement of January 13, 2003 final; objected to the disclosure for containing embedded hyperlinks; objected to the abstract for exceeding the 150-word limit; rejected claims 33, 46-53, 57, 67-68, 70, 76-78, 82-89, 96, 102, 106, 108-110, 120, 124 and 129-131 under 35 U.S.C. § 112, first paragraph, as containing new matter; rejected claims 17, 60, 63, 90, 92, 105 and 106 under 35 U.S.C. § 112, second paragraph, as indefinite; rejected claims 1-3, 14-23, 27-28, 33-43, 54-56, 59-64, 71-75, 78, 80, 89-91, 93-94, 97-101, 103-106, 120-121, 125, and 127-132 under 35 U.S.C. § 102(a) as being anticipated by Goto et al. ("LIGAND: chemical database for enzyme reactions," Bioinformatics, Volume 14, 1998, pages 591-599); and rejected claims 1, 10, 46-53, 57, 59, 67-68, 79, 81-86, 92, 108-109, 122-124, and 133-138 under 35 U.S.C. § 102(a) as being anticipated by Ogata et al. ("KEGG: Kyoto Encyclopedia of Genes and Genomes," Nucleic Acids Research, Volume 27, 1999, pages 29-34). The Examiner also objected to claims 95, 107, and 126 as dependent upon rejected base claims, but allowable if rewritten in independent form.

In view of the foregoing amendment and the remarks that follow, Applicants respectfully traverse the Examiner's objections of the disclosure and rejections of the claims under 35 U.S.C. §§ 102 and 112.

Claims 1-138 are pending in the application. Of those claims, claims 4-9, 11-13, 24-26, 29-32, 44-45, 58, 65-66, 69, and 111-119 have been withdrawn from consideration.

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The Examiner indicated that the Applicants' traversal of the Restriction Requirement is unpersuasive. Specifically, the Examiner noted that the pending claims are given the broadest reasonable interpretation consistent with the specification, and in light of such practice, claims 45 and 58 are generic to the species listed in the written Restriction Requirement of January 13, 2003 (Office action, page 2). Applicants respectfully request clarification of the Examiner's position. For example, Applicants do not understand which of the species listed in the written Restriction Requirement claims 45 and 58 are generic to.

As noted above, the Examiner indicated that claims 4-9, 11-13, 24-26, 29-32, 44-45, 58, 65-66, 69, and 111-119 have been withdrawn from consideration. The Examiner indicated that those claims are withdrawn because they are directed to a species other than a species that is a system comprising a memory of data about compounds and targets with interaction information, known compounds with known biological activity, have failed in pre-clinical or human clinical test, and molecular targets include receptors. *Id.*

Applicants respectfully submit that the Examiner has not properly withdrawn all of these claims from consideration. Specifically, both claims 44 and 45 include information that generally pertains to interaction between chemical compounds and molecular targets. More particularly, claim 44 recites "a third set of information reflecting an interaction between the chemical compounds and the molecular targets," and claim 45 recites "a third array of records, each corresponding to a binding capability between each of the chemical compounds and molecular targets." This is contrary to the

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Examiner's assertion that claims 44 and 45 are directed to a species other than a species with interaction information.

Referring to the Restriction Requirement of January 13, 2003, the Examiner distinguished Species A from Species B by noting that Species A has interaction information, while Species B does not have interaction information. In the Response to the Restriction Requirement dated February 13, 2003, Applicants provisionally elected Species A. Because claims 44 and 45 include interaction information, Applicants submit that the Examiner should have considered at least these claims.

The Examiner objected to the disclosure as containing an embedded hyperlink and/or other form of browser-executable code. *Id.*, page 3. Applicants have amended the specification to make the hyperlinks inactive, rendering this objection moot.

The Examiner objected to the abstract for exceeding the 150-word limit. *Id.* In response, Applicants have replaced the abstract with one that conforms to the limit.

I. Rejections Under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 33, 46-53, 57, 67-68, 70, 76-78, 82-89, 96, 102, 106, 108-110, 120, 124 and 129-131 under 35 U.S.C. § 112, first paragraph, as containing new matter (Office Action, page 10). Applicants have canceled claims 57, 106, 109, and 130-131, rendering the new matter rejection moot for those claims.

Regarding claim 33, the Examiner indicated that the term "datastore" is new matter. Applicants have changed the term "datastore" to "database." Applicants respectfully submit that the new matter rejection of claim 33 has been overcome.

Regarding claims 46-53, the Examiner indicated that the term "memory device" is new matter. Applicants have changed the term "memory device" to "database."

Applicants respectfully submit that the new matter rejection of claims 46-53 has been overcome.

Applicants have also amended claims 70, 76, 88, 120, 124, and 129 in a manner that eliminates the alleged new matter from those claims.

Applicants have also made several amendments to the specification incorporating subject matter from references previously incorporated by reference. These amendments do not represent the introduction of new matter to the application, since the application as filed incorporates the subject matter by reference. The subject matter may be found, among other places, in Provisional Application No. 60/130,992, filed April 26, 1999, upon which the Applicants claim priority for this application. Subject matter from the Provisional Application includes the additional sheets of drawings attached to this Amendment. Other sources for added material are noted in the specification. Applicants note the provisions of MPEP § 608.01(p)(I)(A), and the accompanying Declaration of Applicants' Representative.

This added subject matter is sufficient to overcome the new matter rejections of claims 67-68, 76-78, 87, 89, 96, 102, 108, and 110.

Regarding claims 82-86, Applicants respectfully submit that support for these claims may be found, for example, at page 26, line 11 - page 27, line 16, and page 29, line 12 - page 30, line 7, of the application as originally filed.

For these reasons, Applicants request that the Examiner withdraw these rejections.

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II. Rejections Under 35 U.S.C. § 112, Second Paragraph

The Examiner rejected claims 17, 60, 63, 90, 92, 105 and 106 under 35 U.S.C. § 112, second paragraph, as indefinite (Office Action, page 14). Applicants traverse, however they have amended these claims to provide more clarity. In view of these amendments, Applicants request that the Examiner withdraw these rejections.

III. Rejections Under 35 U.S.C. § 102

A. Goto et al.

The Examiner rejects claims 1-3, 14-23, 27-28, 33-43, 54-56, 59-64, 71-75, 78, 80, 89-91, 93-94, 97-101, 103-106, 120-121, 125, and 127-132 under 35 U.S.C. § 102(a) as being anticipated by Goto et al. (Office Action page 3). Applicants traverse. In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Furthermore, "[t]he identical invention must be shown in as complete detail as is contained in...the claim." See M.P.E.P. § 2131 (8th Ed., Aug. 2001), quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1126, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989). Finally, "[t]he elements must be arranged as required by the claim." § 2131 (8th ed., 2001), p. 2100-69.

Present claim 1 provides for a computer system comprising: a first database containing records corresponding to a plurality of chemical compounds and records corresponding to biological information related to effects of such chemical compounds on biological systems; a second database containing records corresponding to a plurality of molecular targets; a third database containing records corresponding to tests of interactions between compounds in the first database and molecular targets in the

second database, the tests including information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and said molecular target; and a user interface allowing a user to view the selected compound and to selectively view information from the first database, the second database, and the third database as it relates to a compound record in the first database or as it relates to a molecular target in the second database.

Applicants respectfully submit that Goto et al. does not disclose or suggest this claimed combination of elements. For example, the reference does not disclose or suggest at least a third database containing records corresponding to tests of interactions between compounds in the first database and molecular targets in the second database, the tests including information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and said molecular target.

Goto et al. discloses the LIGAND chemical database, which consists of two sections: ENZYME and COMPOUND (page 591, left col.). The COMPOUND section has information on the nomenclature and chemical structures of compounds (page 591, left col.). The ENZYME section of the LIGAND database accumulates information on known enzymes and reactions (page 592, right col.). Reaction data is reflected in the REACTION field of the ENZYME entry (page 592, right col.). Enzymatic or non-enzymatic reactions may be written in the form of a chemical reaction in the REACTION field and maintained in a relational database as a substrate-product binary relationship, or a set of substrate-product binary relationships (page 594, left col.). Goto et al. also

discloses a database called BRITE that is for molecular interactions in general (page 597, right col.).

In contrast, systems and methods consistent with the present invention as recited, for example, in present claim 1 provide for a database containing records corresponding to tests of interactions between compounds in a first database and molecular targets in a second database. The tests include information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and the molecular target. The databases disclosed in Goto et al. do not store reaction or interaction information that includes the effect that a compound has on a known interaction between a compound and a molecular target. Goto et al. shows interaction information in general but not information on the effect that a compound has on an interaction.

Accordingly, Goto et al. does not teach or suggest "a third database containing records corresponding to tests of interactions between compounds in the first database and molecular targets in the second database, the tests including information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and said molecular target."

For at least the foregoing reasons, Applicants submit that claim 1 is not anticipated by Goto et al. Because independent claims 33, 37, and 54 recite the same language that distinguishes claim 1 from Goto et al., Applicants further submit that

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claims 33, 37, and 54 are not anticipated by Goto et al. for at least the reasons given with respect to claim 1.

Applicants also submit that the teachings of Ogata et al. are insufficient to remedy the deficiencies of Goto et al. Accordingly, no combination of Goto et al. and Ogata et al. teaches or suggests the elements of claims 1, 33, 37, and 54.

Present claim 35 provides for a computer system comprising: a first database containing data corresponding to a plurality of synthetic chemical compounds and data corresponding to biological information related to effects of such synthetic chemical compounds on biological systems; a second database containing data corresponding to a plurality of molecular targets; a third database containing data corresponding to tests of interactions between compounds in the first database and molecular targets in the second database; and a user interface allowing a user to view data from the first database, the second database, and the third database as it relates to at least one compound in the first database or as it relates to at least one molecular target in the second database or as it relates to one or more interactions in the third database.

Applicants respectfully submit that Goto et al. does not disclose or suggest at least this claimed combination of elements. For example, the reference does not disclose or suggest at least a first database containing data corresponding to a plurality of synthetic chemical compounds and data corresponding to biological information related to effects of such synthetic chemical compounds on biological systems.

As noted above, Goto et al. discloses that a COMPOUND section has information on the nomenclature and chemical structures of compounds (page 591, left col.). Goto et al. further discloses that the COMPOUND section is a collection of

metabolic compounds, including substrates, products, inhibitors, cofactors and effectors, and other chemical compounds that play important functional roles in living cells (page 592, left col.).

In contrast, systems and methods consistent with the present invention as recited, for example, in present claim 35 provide for the storage of data corresponding to synthetic chemical compounds. Goto et al. focuses entirely on compounds involved in living cells or natural biological systems, which are not synthetic chemical compounds. Accordingly, Goto et al. does not teach or suggest a first database containing data corresponding to a plurality of synthetic chemical compounds and data corresponding to biological information related to effects of such synthetic chemical compounds on biological systems.

For at least the foregoing reasons, Applicants submit that claim 35 is not anticipated by Goto et al. Because independent claims 59 and 132 recite the same language that distinguishes claim 35 from Goto et al., Applicants submit that claims 59 and 132 are not anticipated by Goto et al. for at least the reasons given with respect to claim 35.

Applicants also submit that the teachings of Ogata et al. are insufficient to remedy the deficiencies of Goto et al. Accordingly, no combination of Goto et al. and Ogata et al. teaches or suggests the elements of claims 35, 59, and 132.

Dependent claims 2-3, 14-23, 27-28, 34, 36, 38-43, 55-56, 60-64, 71-75, 78, 80, 89-91, 93-94, 97-101, 103-106, 120-121, 125, and 127-131 are allowable not only for the reasons stated above with regard to their respective allowable base claims, but also for their own additional features that distinguish them from Goto et al.

In view of these remarks, Applicants request that the Examiner withdraw the rejection.

B. Ogata et al.

The Examiner rejected claims 1, 10, 46-53, 57, 59, 67-68, 79, 81-86, 92, 108-109, 122-124, and 133-138 under 35 U.S.C. § 102(a) as being anticipated by Ogata et al. (Office Action, page 8). Applicant traverse the rejection.

Applicants respectfully submit that Ogata et al. does not disclose or suggest at least the claimed combination of elements of claim 1. For example, as in the case of Goto et al., the reference does not teach or suggest "a third database containing records corresponding to tests of interactions between compounds in the first database and molecular targets in the second database, the tests including information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and said molecular target."

Ogata et al. discloses that KEGG maintains a catalog of chemical elements, compounds, and other substances in living cells as the LIGAND database (page 29, right col.). Ogata et al. discloses that the LIGAND database stores information of chemical compounds, enzyme molecules, and enzymatic and non-enzymatic reactions (page 33, right col.).

As noted above with reference to Goto et al., systems and methods consistent with the present invention as recited in present claim 1 provide for a database containing records corresponding to tests of interactions between compounds in a first database and molecular targets in a second database. The tests include information on

the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and the molecular target. The databases disclosed in Ogata et al. do not store reaction or interaction information that includes the effect that a compound has on a known interaction between a compound and a molecular target. Ogata et al. discloses the LIGAND database, which includes interaction information in general but not information on the effect that a compound has on an interaction.

Accordingly, Ogata et al. does not teach or suggest "a third database containing records corresponding to tests of interactions between compounds in the first database and molecular targets in the second database, the tests including information on the effect that a compound from the plurality of compounds has on the interaction of a compound known to interact with a molecular target from the plurality of molecular targets and said molecular target."

For at least the foregoing reasons, Applicants submit that claim 1 is not anticipated by Ogata et al. Because independent claim 133 recites the same language that distinguishes claim 1 over Ogata et al., Applicants further submit that claim 133 is not anticipated by Ogata et al. for at least the reasons given with respect to claim 1.

Applicants also submit that the teachings of Goto et al. are insufficient to remedy the deficiencies of Ogata et al. Accordingly, no combination of Ogata et al. and Goto et al. teaches or suggests the elements of claims 1 and 133.

Present claim 46 provides for a database for storing data for access by a process executed by a processor, the database comprising: a compound data structure including data associated with a set of synthetic chemical compounds; a target data

structure including data associated with a set of molecular targets; and a result data structure including data corresponding to results of screening tests between chemical compounds and molecular targets, wherein the process determines a relationship between the data included in the compound, target, and result data structures.

Applicants respectfully submit that Ogata et al. does not disclose or suggest this claimed combination of elements. For example, the reference does not disclose or suggest at least a compound data structure including data associated with a set of synthetic chemical compounds.

As noted above, Ogata et al. discloses that KEGG maintains a catalog of chemical elements, compounds, and other substances in living cells as the LIGAND database. The LIGAND database includes a COMPOUND section having information on the nomenclature and chemical structures of compounds (see Goto et al., page 591, left col.). Goto et al. further discloses that the COMPOUND section is a collection of metabolic compounds, including substrates, products, inhibitors, cofactors and effectors, and other chemical compounds that play important functional roles in living cells (see Goto et al., page 592, left col.). Ogata et al. does not teach or suggest that the compounds in KEGG or LIGAND are anything other than related to living cells or natural biological systems.

In contrast, systems and methods consistent with the present invention as recited for example in present claim 46 provide for the storage of data corresponding to synthetic chemical compounds. Ogata et al. focuses entirely on compounds involved in living cells or natural biological systems, which are not synthetic chemical compounds.

Accordingly, Ogata et al. does not disclose, teach, or suggest at least a compound data structure including data associated with a set of synthetic chemical compounds.

For at least the foregoing reasons, Applicants submit that claim 46 is not anticipated by Ogata et al. Because independent claim 59 recites the same language that distinguishes claim 46 from Ogata et al., Applicants further submit that claim 59 is not anticipated by Ogata et al. for at least the reasons given with respect to claim 46.

Applicants also submit that the teachings of Goto et al. are insufficient to remedy the deficiencies of Ogata et al. Accordingly, no combination of Ogata et al. and Goto et al. teaches or suggests the elements of claims 46 and 59.

Dependent claims 10, 47-53, 67-68, 79, 81-86, 92, 108-109, 122-124, and 134-138 are allowable not only for the reasons stated above with regard to their respective allowable base claims, but also for their own additional features that distinguish them from Ogata et al.

For example, with respect to claims 79 and 81-86, the Examiner alleges that it is inherent in such techniques as the ligand-receptor binding assays, yeast two-hybrid system and microarray expression assays that interactions are determined by some potency value or compared to some specified threshold value (Office Action, page 9). Applicants respectfully disagree. In order for inherency to exist, the missing descriptive matter must necessarily be present in the thing described by the reference. *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 20 USPQ2d 1746 (Fed. Cir. 1991). It is not necessarily true that in ligand-receptor binding assays, the yeast two-hybrid system, and microarray expression assays, interactions are determined by some potency value or compared to some specified threshold value. This is merely a

possibility. Accordingly, these types of determinations are not inherent, and the features of claims 79 and 81-86 are not inherently taught by Ogata et al.

Based on the above remarks, Applicants request that the Examiner withdraw this rejection.

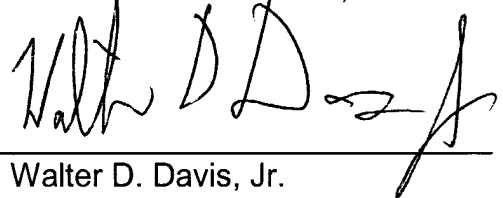
CONCLUSION

Since each of the claims is allowable, Applicants respectfully request the timely allowance of this application.

If an extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Amendment, such extension is requested. If there are any other fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.



Dated: September 10, 2003

By: _____
Walter D. Davis, Jr.
Reg. No. 45,137

Attachments: 9 New Drawings Sheets (Figs. 1C, 1D, 2A, 3A, 7A, 7B, 7C, 8A, 8B)

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